



Drinking Water and Radiation Laboratory Branch

850 Marina Bay Parkway, Richmond, CA 94804

Phone: (510) 620-2911 Fax: (510) 620-2940

FINAL Analysis Results Report for Task ID. 12-0033

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0033-01 Sample ID: 1st Qtr 2012 Time Collected: 2/14/2012 16:30 Sampling Point: Eureka Sample Type: Air Composite				
Cesium-134	HASL Ga-01-R	0.0000661 +/- 0.0000357	0.000106	pCi/m3
Beryllium-7	HASL Ga-01-R	0.0820 +/- 0.00226	0.00205	pCi/m3
Potassium-40	HASL Ga-01-R	-0.000182 +/- 0.000528	0.00251	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000588 +/- 0.000112	0.000320	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.000176 +/- 0.000127	0.000327	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000242 +/- 0.0000837	0.000243	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000767 +/- 0.000346	0.00105	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000985 +/- 0.0000345	0.000109	pCi/m3
Cerium-141	HASL Ga-01-R	0.0000624 +/- 0.000159	0.000409	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000208 +/- 0.000220	0.000546	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where S_b is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 12-0034

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0034-01				
Sample ID: 1st Qtr 2012 Time Collected: 2/17/2012 12:20 Sampling Point: Humboldt Bay				
Sample Type: Air Composite				
Cesium-134	HASL Ga-01-R	0.0000404 +/- 0.0000316	0.0000918	pCi/m3
Beryllium-7	HASL Ga-01-R	0.0852 +/- 0.00230	0.00172	pCi/m3
Potassium-40	HASL Ga-01-R	0.000224 +/- 0.000442	0.00207	pCi/m3
Niobium-95	HASL Ga-01-R	-0.000150 +/- 0.000105	0.000270	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000426 +/- 0.000100	0.000272	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000119 +/- 0.0000727	0.000214	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000268 +/- 0.000320	0.000918	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000182 +/- 0.0000327	0.0000929	pCi/m3
Cerium-141	HASL Ga-01-R	-0.0000493 +/- 0.000137	0.000347	pCi/m3
Cerium-144	HASL Ga-01-R	0.000256 +/- 0.000186	0.000487	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
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- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 12-0037

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0037-01 Sample ID: 1st Qtr 2012 Time Collected: 2/14/2012 09:05 Sampling Point: Richmond Sample Type: Air Composite				
Cesium-134	HASL Ga-01-R	0.0000575 +/- 0.0000253	0.000103	pCi/m3
Beryllium-7	HASL Ga-01-R	0.104 +/- 0.00279	0.00216	pCi/m3
Potassium-40	HASL Ga-01-R	0.000421 +/- 0.000629	0.00294	pCi/m3
Niobium-95	HASL Ga-01-R	0.000105 +/- 0.000127	0.000352	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000517 +/- 0.000124	0.000327	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000770 +/- 0.000101	0.000272	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.000163 +/- 0.000359	0.000984	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000391 +/- 0.0000382	0.000106	pCi/m3
Cerium-141	HASL Ga-01-R	-0.0000270 +/- 0.000155	0.000469	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000206 +/- 0.000202	0.000612	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
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- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where S_b is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 12-0035

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0035-01				
Sample ID: 1st Qtr 2012 Time Collected: 2/14/2012 11:32 Sampling Point: Livermore				
Sample Type: Air Composite				
Cesium-134	HASL Ga-01-R	0.00000937 +/- 0.0000249	0.000104	pCi/m3
Beryllium-7	HASL Ga-01-R	0.131 +/- 0.00344	0.00226	pCi/m3
Potassium-40	HASL Ga-01-R	0.00156 +/- 0.000530	0.00241	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000496 +/- 0.000100	0.000311	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000258 +/- 0.000103	0.000310	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000454 +/- 0.0000899	0.000244	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000404 +/- 0.000343	0.000927	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000133 +/- 0.0000386	0.000109	pCi/m3
Cerium-141	HASL Ga-01-R	-0.000250 +/- 0.000162	0.000434	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000539 +/- 0.000182	0.000523	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
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- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



State of California - Health and Human Services Agency

California Department of Public Health



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FINAL Analysis Results Report for Task ID. 12-0032

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0032-01	Sample ID: 1st Qtr 2012	Time Collected: 2/17/2012 14:48	Sampling Point: San Luis Obispo	Sample Type: Air Composite
Cesium-134	HASL Ga-01-R	-0.0000124 +/- 0.0000298	0.000124	pCi/m3
Beryllium-7	HASL Ga-01-R	0.144 +/- 0.00385	0.00339	pCi/m3
Potassium-40	HASL Ga-01-R	0.00106 +/- 0.000713	0.00330	pCi/m3
Niobium-95	HASL Ga-01-R	0.000108 +/- 0.000122	0.000355	pCi/m3
Zirconium-95	HASL Ga-01-R	0.000136 +/- 0.000126	0.000372	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000720 +/- 0.0000874	0.000263	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.00108 +/- 0.000458	0.00113	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000113 +/- 0.0000450	0.000126	pCi/m3
Cerium-141	HASL Ga-01-R	0.000306 +/- 0.000158	0.000403	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000209 +/- 0.000248	0.000584	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
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- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where S_b is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 12-0029

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0029-01 Sample ID: 1st Qtr 2012 Time Collected: 2/17/2012 15:21 Sampling Point: Diablo Canyon Sample Type: Air Composite				
Cesium-134	HASL Ga-01-R	0.0000188 +/- 0.0000365	0.0000953	pCi/m3
Beryllium-7	HASL Ga-01-R	0.131 +/- 0.00342	0.00236	pCi/m3
Potassium-40	HASL Ga-01-R	0.000420 +/- 0.000493	0.00230	pCi/m3
Niobium-95	HASL Ga-01-R	-0.000111 +/- 0.0000869	0.000251	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000495 +/- 0.0000863	0.000269	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000667 +/- 0.0000788	0.000203	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000379 +/- 0.000345	0.000926	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000366 +/- 0.0000341	0.0000921	pCi/m3
Cerium-141	HASL Ga-01-R	-0.0000813 +/- 0.000132	0.000361	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000258 +/- 0.000172	0.000496	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radio-nuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 12-0036

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0036-01 Sample ID: 1st Qtr 2012 Time Collected: 2/13/2012 07:00 Sampling Point: Los Angeles Sample Type: Air Composite				
Cesium-134	HASL Ga-01-R	0.0000964 +/- 0.0000406	0.000123	pCi/m3
Beryllium-7	HASL Ga-01-R	0.154 +/- 0.00408	0.00295	pCi/m3
Potassium-40	HASL Ga-01-R	-0.00125 +/- 0.000611	0.00293	pCi/m3
Niobium-95	HASL Ga-01-R	0.00000133 +/- 0.000133	0.000370	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000961 +/- 0.000127	0.000368	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000402 +/- 0.000112	0.000307	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000305 +/- 0.000367	0.00106	pCi/m3
Cesium-137	HASL Ga-01-R	0.000110 +/- 0.0000367	0.000167	pCi/m3
Cerium-141	HASL Ga-01-R	0.000282 +/- 0.000160	0.000528	pCi/m3
Cerium-144	HASL Ga-01-R	0.000171 +/- 0.000204	0.000662	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 12-0031

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0031-01 Sample ID: 1st Qtr 2012 Time Collected: 2/17/2012 16:00 Sampling Point: San Onofre Sample Type: Air Composite				
Cesium-134	HASL Ga-01-R	-0.000112 +/- 0.0000557	0.000142	pCi/m3
Beryllium-7	HASL Ga-01-R	0.157 +/- 0.00426	0.00379	pCi/m3
Potassium-40	HASL Ga-01-R	0.000105 +/- 0.000841	0.00396	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000139 +/- 0.000160	0.000446	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000537 +/- 0.000151	0.000433	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.000115 +/- 0.000119	0.000331	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000686 +/- 0.000474	0.00141	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000222 +/- 0.0000539	0.000154	pCi/m3
Cerium-141	HASL Ga-01-R	-0.000190 +/- 0.000215	0.000502	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000512 +/- 0.000298	0.000679	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 12-0030

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0030-01 Sample ID: 1st Qtr 2012 Time Collected: 2/16/2012 13:54 Sampling Point: San Diego Sample Type: Air Composite				
Cesium-134	HASL Ga-01-R	0.0000187 +/- 0.0000380	0.000128	pCi/m3
Beryllium-7	HASL Ga-01-R	0.139 +/- 0.00374	0.00343	pCi/m3
Potassium-40	HASL Ga-01-R	-0.000126 +/- 0.000756	0.00356	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000471 +/- 0.000144	0.000392	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000196 +/- 0.000151	0.000405	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000532 +/- 0.000114	0.000313	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.00109 +/- 0.000469	0.00117	pCi/m3
Cesium-137	HASL Ga-01-R	-0.0000120 +/- 0.0000467	0.000128	pCi/m3
Cerium-141	HASL Ga-01-R	-0.000226 +/- 0.000177	0.000523	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000154 +/- 0.000253	0.000759	pCi/m3

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